

Report

Panel 2.8 Water, Sanitation, Food Safety and Environmental Health

Background

The Tsunami of December 26, 2004 caused major loss of infrastructure, destroying and damaging houses, hospitals, water supply and sanitation, roads and communication links. Very large numbers of people became displaced and many essential services were disrupted.

The damage and the impact of the damage in the affected countries was rather varied. In Aceh and the Andaman and Nicobar islands damage was such that it took weeks to make a proper assessment, while South India and Sri Lanka managed a quick overview of the affected areas and could rapidly mobilize assistance. The Maldives suffered in its entirety, with most islands experiencing physical and environmental damage. In all instances water supplies were damaged and the wells that households used were unusable due to salinity and dirt. Debris and damaged housing caused risk of injury and changed the vector borne disease risk potential. Displacement exposed the population to a changing situation in which access to water, sanitation, food and shelter demanded adjustments that may have introduced exposure to health risks.

Needs assessment

Needs assessments should be undertaken by multidisciplinary teams that address a range of issues relevant to the emergency. The teams will at least have competencies in public health, water and sanitation, nutrition and food security; and if possible primary health care/maternal and child health. The team would consist of national/local officials or is supported by local officials to ensure adequate consideration of local cultural conditions and feed-back to local authorities.

The environmental health component of the assessment will concentrate on immediate relief in water supply and sanitation. It should preferably have taken into account the pre-disaster situation with respect to water supply. If at all possible such information should be collected before the assessment. In Sri Lanka piped schemes in the towns and dug wells in the coastal belt were damaged. Plans of existing piped schemes helped to restore supplies quicker (a reasonable supply within 4 days) and allowed water distribution to communities not linked up with a piped scheme through tankering. Initial water and sanitation assessment formats were deemed adequate for the purpose of immediate relief. However through community consultation and sensitivity to cultural needs and expectations, an improved response would be possible.

OXFAM, in Aceh, reported positive results with the rapid community consultation. These assessments were done by a health and engineering team who were able to start implementation within 24 hours with an action plan set in motion often by mobile phone on the journey back to the office. Knowledge of pre-crisis levels of health awareness, health-seeking behaviour, community social structures and women's status were supplied by the national staff members. The assessments were generally effective and efficient when community-driven or undertaken in consultation with the community.

Water supply

Drinking water was not a very big problem in most affected areas. In Aceh water and firewood was available and as people were used to boiling water, most communities survived until aid

came. The use of hypochlorite based disinfectants for water was cautioned against by the Government of Indonesia as it did not fit in the current habits, e.g. people were found to boil water after disinfection.

Adequate supplies of drinking water of reasonable quality were available in Sri Lanka in the affected areas within a few days. Most of the water was supplied by tankers and so adequate chlorination of the water at the water point or household level was a challenge. Residual chlorine at the distribution point was checked with chloroscopes. The chloroscopes were also provided to public health inspectors and field staff to ensure water quality surveillance.

In this emergency where people have lost nearly everything, provision of safe water containers or buckets with a lid would be useful.

The Tsunami crisis did however cause a mismatch between needs and supplies, in the sense that e.g. package treatment plants and reverse osmosis plants were brought in which mostly can not be maintained long-term by the community on their own. While there is a need for quick fixes that can produce large quantities of safe water, the final water supply option should meet community capabilities in operation and maintenance, management and affordability.

Limited attention seems to have been given to restoration or construction of institutional water supply and sanitation systems in health facilities and schools.

Sanitation

Sanitation in IDPs was a problem due to improper site design or locations or latrines such that women and children could not use the latrines during the night. Pit latrines were not acceptable in Aceh, as the population was used to anal cleansing using water, while the inhabitants of former fishing villages in the affected coastal areas had often limited experience with latrines.

The limited number of latrines caused problems with maintenance (regular cleaning and desludging). Suitable sites for discharging latrine waste were not easily available.

Some of the agencies that came to assist did not have experience with the challenges that they faced in sanitation and the design of camps.

Hygiene

It is important to maintain hygiene standards by providing sufficient water, soap, hygiene kits, etc. It is equally important to be careful not to take away from deeply traumatised people the last vestiges of dignity by assuming that they are not aware of the basic concepts of hygiene. Thus, if so necessary, hygiene promotion should be done with sensitive reference to the local cultural and socio-economic context.

OXFAM provided underwear through a bazaar-tent that allowed women to select their requirements in private.

Lesson Learned 1

Restoration of water supply services, adequate and acceptable sanitation arrangements, proper shelter and ability to maintain personal hygiene are important instruments to restore physical and mental health in the household. Items such as plastic sheeting and a basic household kit are supportive to this effort as it enables the household flexibility to look after its own affairs. E.g. a plastic sheet is multi-functional as it provides a roof, can protect household assets, can help to collect rainwater, etc.

Institutional Capacity and Coordination

Where the main government set-up was not seriously affected, or in areas that were not so remote, restoration of essential services was quite quickly ensured. The local governments in Thailand, India and Sri Lanka basically remained in charge of the relief efforts. The existence of a decentralized structure of government and water supply agencies ensured quick and reasonably effective action (Tamil Nadu, Sri Lanka).

In Sri Lanka sector coordination is institutionalized informally through a network of Government agencies, NGOS and sector support institutions, led by the National Water Supply and Drainage Board. The group meets quarterly, supports action-research, develops policies and exchanges sector experiences. This entity allowed for a rapid coordination and networking, cooperative action and understanding of needs. A similar emerging effort in India, and the existence of a roster of emergency-mitigation trained engineers under RedR- India allowed rapid deployment of additional expertise to support relief efforts in water supply, sanitation and environmental health.

Pre-crisis existence of these mechanisms has certainly enhanced coordination and speeded up deployment of national experts. In Indonesia, a similar set-up was established during the Tsunami crisis. These coordination mechanisms has assisted Government and NGO development partners who were already working in the country before the emergency to harness and guide the inputs of new humanitarian aid agents. The existence of similar mechanisms in Bangladesh in both emergency response and the water and sanitation sector has over the last few years allowed for faster and more effective responses to emergencies.

A functioning coordination mechanism will also allow capacity building for emergency preparedness, including prior agreement on local standards and approaches for water and sanitation, taking into account national expertise and the SPHERE standards.

Lesson Learned 2

A functioning interest & needs-based watsan sector network will enhance preparedness, facilitate agreement on minimum standards for response, speed up initial response and assist in matching external support to local needs.

What was done well and what could have been done better?

With limited Environmental Health staff in countries (only Indonesia and India), WHO in the first days complemented its efforts by distributing straightforward 4-page technical guidance fact sheets on disinfection, source selection, sanitation, etc. to relevant field agencies. The material had been produced by WHO-SEARO as part of an emergency preparedness activity. The documentation that was further made available through WHO and WEDC websites was highly appreciated. CARE-Indonesia arranged for selected sheets to be translated in Bahasa Indonesia.

- A dedicated WHO website should be populated with practical, well illustrated informative fact sheets for (general) field staff on water, sanitation and environmental health in emergencies (PDF format)The sheets can be photocopied (A3 size), folded and carried.

Water for drinking was available quickly in reasonable quantity and often good quality. The fact that regular supply systems for bottled water and centralized water supply could be mobilized rapidly helped a lot. Provision of bleaching powder for piped supplies and tanker distribution and water quality testing equipment helped to maintain bacteriological water quality standards.

It is to be noted here that Thailand, India and Sri Lanka are becoming sophisticated market economies where bottled water can be arranged quickly. In Aceh availability of water and firewood for boiling ensured safe water for those communities that could initially not be reached. Even the Maldives managed to produce and import bottled water, and have water produced by desalination plants.

Transport into remote areas and islands was a problem due to distance or disruption of road links.

- In addition to boiling water (Aceh, Sri Lanka), household water treatment options (disinfection by hypochlorite, SODIS) could be promoted through public information campaigns in emergency prone areas, as part of the emergency preparedness toolkit.

Providing an adequate quantity of water for hygiene and domestic use may have been a problem as provision of storage at the home and in the IDP camps took time to establish. This was noted in Aceh where scabies and conjunctivitis was noted, probably also due to non-availability of soap and washing powder.

- A next time, large distribution of soap, detergent, hygiene kits for women, all fitted in a bucket (OXFAM) or other water container, should be arranged.

The overall sanitation situation was poor, either non-existent or overcrowded (no latrines, no landfills, ...). In future prime attention should be given to sanitation and facilitating personal hygiene. Like in normal times, water supply receives a lot of attention, but sanitation and hygiene promotion, which are essential to avoid communicable disease outbreaks are not adequately taken care of.

- Serious attention needs to be given to design of IDP camps, especially with respect to sanitation, but also taking due care of drainage and waste disposal.

Food safety has been monitored, but no outbreaks of note of food-borne diseases have been recorded. Hand-washing was identified as probably the most effective way of avoiding infectious disease in the circumstances.

In Aceh, due to the timely and significant response from the multi-national militaries, basic food staples, particularly rice and noodles, have been distributed by helicopter to most locations on the west coast of Aceh affected by tsunami. However, in most locations food supplies did not include protein, oil, sugar and vegetables. There has been no targeting of food relief and no special effort to get food to the most vulnerable populations (children under 5 years, elderly, pregnant and lactating women). No acute, moderate or severe malnutrition was noted.

- Food security has to be improved to meet the basic nutritional needs, in particular in infants, young children and pregnant women
- Distribution of food should be coordinated by a single agency and done through the civilian authorities (rather than the military)
- Each household should have access to cooking and eating utensils, and water storage

Overall, **what should be done better:**

- Better coordination; more effective use of resources and less duplication
- Better logistical management so that items were given out quickly with coordination and agreement between agencies
- SPHERE guidelines or other agreed national standards should be known and applied by all actors: standards and design of latrines, shelter and water provision/ water disinfection

- Technical support to Government Agencies and NGOs

Capacity Building and Emergency Preparedness

First of all, it needs to be emphasized that some capacity is always available in the country or in the affected area. However, for a variety of reasons, the capacity and competence may have been eroded and actors need to restore their capability through training, and reviewing and updating Standard Operating Procedures (including appropriate practical, technical guidelines on water supply and sanitation in emergencies). Capacities are also available within the military and these should also be included in the Emergency Preparedness scenario.

Lesson Learned 3

A sector that functions well during regular operation, will find that its infrastructure is easier to rehabilitate than a sector that has suffered from neglect. In Sri Lanka and Tamil Nadu, water supply services were up and running quite quickly, while in some schemes in Aceh, it will still take time to rehabilitate the schemes as the treatment plants were not functioning before the disaster.

Even then, it may be possible nowadays to plan a bit better, through the use of computerized scenarios, and ensure that agency assets are identified in such scenario planning and designated for emergency duties (reservoirs, treatment plant, certain vehicles). This also means that annual disaster preparedness reviews need to include inspection of these assets and reconfirmation of their availability and functioning. Additional engineering and security protection measures, through initial design or as retrofit, will also be necessary to ensure that water supplies and waste (water) management plants are not easily compromised in the event of a disaster

Training of management and staff in Standard Operating Procedures and technical guidelines will be required.

Lesson Learned 4

Emergency preparedness for disruptions in water and sanitation services, for hazardous waste spills and explosions, and other incidents that threaten to expose the population to environmental health risks, needs to be strengthened urgently at national and local level, in a multi-disciplinary way, that brings together local authorities, health and engineering competencies. A national/local framework of preparedness and response policies, strategies and SOPs needs to be formulated.

Environmental Health

Beyond the immediate disaster relief effort, various issues in environmental health may crop up that need to be considered for action.

Hazardous Waste

The risk of hazardous waste spills seems to have been limited although some industrial facilities and a nuclear research plant required certification of risk. In Tamil Nadu the Tsunami brought up titanium from the sea bed. It is not clear whether this will cause longer term environmental or water quality problems. Similarly the Tsunami caused the small islands in the Maldives to be churned up, leading to high nitrate contamination in some islands. The restoration of some freshwater storage in the aquifer will take at least one monsoon.

In the Maldives, WHO now will support a 6 months activity to develop an ecologically sound approach to restoring the environmental health of the islands through sanitation and waste management, water resources development and protection (including capture of rainwater), so as to arrive at a sustainable, eco-friendly, healthy island setting.

Health care waste has been registered as a common concern, but has not been linked to any disease outbreaks. Various initiatives are now planned to introduce health care waste management systems in clinics and hospitals in the Maldives, Sri Lanka and Indonesia. Waste management, i.e. safe disposal of human waste, solid waste and hospital waste caused problems due to volume and the absence of functioning or newly designated landfill sites. Inadequacies in waste management may lead to higher risk of recontamination of water sources and thus to water-borne diseases.

Vector control

The potential for vector borne-disease such as dengue and malaria has been raised, but it is not clear whether any trends have been found that indicate higher than usual case-load. Of course the fogging that was undertaken in a number of areas, in particular in the IDP camps, may have influenced the situation.

Rehabilitation and longer-term protection

The aftermath of the tsunami has raised the interest in environmental health. Various activities in settlements and institutional settings have been identified for action, in particular: clinical waste management, water quality protection and monitoring, human and solid waste management, integrated vector management.

In the current medium- and long term rehabilitation period various activities will be undertaken in shelter and settlement (re)development, livelihood restoration and emergency preparedness. It is essential to undertake such activities in good consultation with beneficiary households and communities, and local authorities, while applying an environmental health risk/impact assessment to ensure that optimum socio-economic and health gains are achieved.

The approaches developed in the context of the healthy settings/healthy city programme, and the healthy environment for children initiative offer methods and tools that can readily be applied. Greater attention to environmental health and to the restoration and maintenance of the engineering elements necessary to ensure a functioning physical environment will go a long way to reduce the health risks associated with a next disaster.